

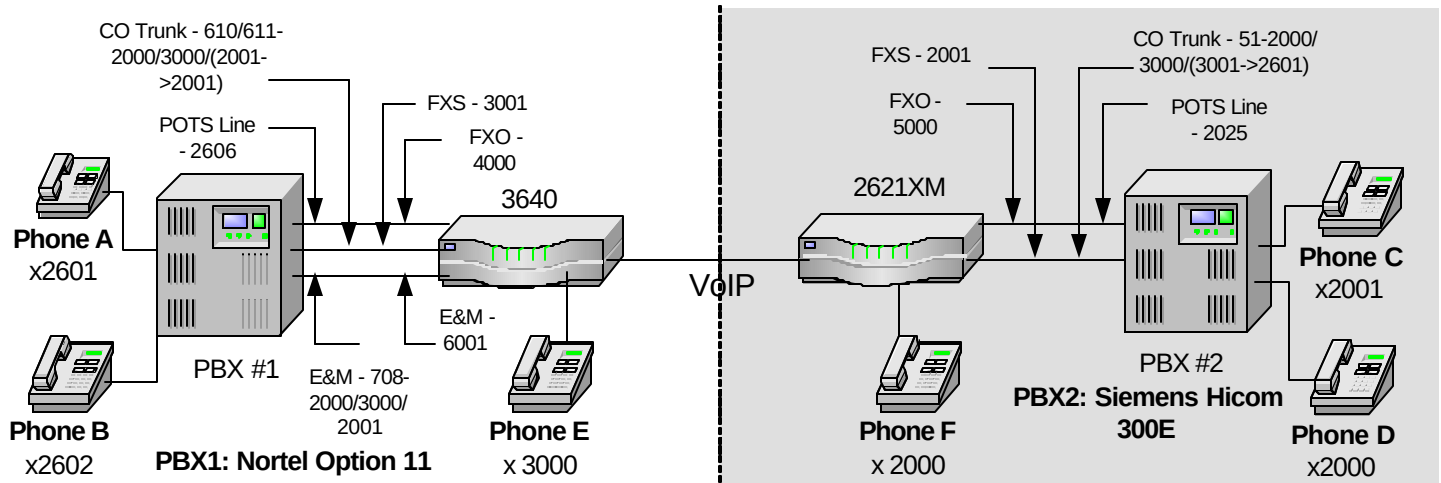
Cisco 2621XM Gateway - PBX Interoperability: Siemens Hicom 300E PBX using Analog FXS/FXO/E&M Interfaces to an MGCP Gateway

Introduction

- This application note describes the interoperability of the Cisco 2621XM router connected to a Siemens Hicom 300E PBX via analog FXS/FXO interface ports.
- The network topology diagram shows the end-to-end interoperability.

Network Topology

Basic Call Setup End-to-End Configuration





Limitations

The FXO voice port goes off-hook on the first ring of an incoming seizure before the targeted phone has answered. The PBX analog extension does not support disconnect supervision, which causes trunk hang issues and long ring-no answer times.

For more information about disconnect supervision, refer to *FXO Answer and Disconnect Supervision* at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122newft/122t/122t2/ft_ansds.htm

System Components

Hardware Requirements

- Cisco 2621XM gateway with analog VIC 2FXO and VIC 2FXS interface cards
- Siemens Hicom 300E PBX

Software Requirements

- Cisco IOS Software Release c2600-is-mz.122-10.7.T6
- Siemens PBX Software Release 6.6

Configuration

Configuring the Siemens Hicom 300E PBX

CO Trunk Configuration

```
DIS-BCSU:TBL,1,2,31;
```

```
H500: AMO BCSU STARTED
```

ADDRESS	NOM.	BOARD	TYPE	V/R	ACTUAL	BOARD	LWV	FID	FIRMWARE	BD	STATUS	CCN					
1. 2. 31		Q2485-X	TMC16P			Q2485-X		1		0		D429-B		READY		16	

```
AMO-BCSU -226 BOARD CONFIGURATION, SWITCHING UNIT
```



DIS-TCSU:1-2-31-0,1-2-31-3;

H500: AMO TCSU STARTED

+-----+-----+-----+-----+-----+-----+									
PEN: 1- 2- 31- 0		INS: Y		BOARD: TMC16P		DEV: LPSTR		TGRP: 3	
+-----+-----+-----+-----+-----+-----+									
TRKID : 0004		TCCID :							
CCT : LOOP STA/0004									
ACDATA : 0		COTNO : 3		LCRCOSD : 5					
ATNTYP : CO		DITIDX : 1		LCRCOSV : 5					
COFIDX : 3		DPLN : 0		LOCANA :					
COPNO : 50		ITR : 1		REMANA :					
COSNO : 75		CIDDGTS : NONE							
CIRCIDX: 0		NWBNO : *		PTTBLIDX : *					
* = NOT APPLICABLE FOR THIS BOARD TYPE									
+-----+-----+-----+-----+-----+-----+									

+-----+-----+-----+-----+-----+-----+									
PEN: 1- 2- 31- 1		INS: Y		BOARD: TMC16P		DEV: LPSTR		TGRP: 3	
+-----+-----+-----+-----+-----+-----+									
TRKID : 0005		TCCID :							
CCT : LOOP STA/0005									
+-----+-----+-----+-----+-----+-----+									
ACDATA : 0		COTNO : 3		LCRCOSD : 5					
ATNTYP : CO		DITIDX : 1		LCRCOSV : 5					
COFIDX : 3		DPLN : 0		LOCANA :					
COPNO : 50		ITR : 1		REMANA :					
COSNO : 75		CIDDGTS : NONE							
+-----+-----+-----+-----+-----+-----+									
CIRCIDX: 0		NWBNO : *		PTTBLIDX : *					
+-----+-----+-----+-----+-----+-----+									
* = NOT APPLICABLE FOR THIS BOARD TYPE									
+-----+-----+-----+-----+-----+-----+									

AMO-TCSU -226 TRUNK CONFIGURATION, SWITCHING UNIT

DIS-COP;

H500: AMO COP STARTED

		S				E A						
		T				S N						
		A	S		V	S P I D	DD	S				
		D	Z		L	P D D T	TT	U		P		
		I	A	A	S	S A N N O	MM	P		D		
COP		A	N	C	A	A N I I N	FF	V		P		
IDX		L	S	K	T	T I S S E	L	12	1234			
+-----+-----+-----+-----+-----+-----+												
	0											
	1		X									
	6	X	X				X			X		
	50	X						X	X	X		
+-----+-----+-----+-----+-----+-----+												

AMO-COP -226 CLASS OF PARAMETER



DIS-COT;

H500: AMO COT STARTED

	D	A	D	D	M	S	V	E	E	A	R
	I	N	S	S	I	D	A	L	S	S	N
	T	S	A	A	S	R	T	S	P	P	I
		R		S				A	A	D	D
							T	N	N	N	S
								I	I	I	H
COT								S	S		
0											
1		X									
3	X										
6		X									
14	X			X							

AMO-COT -226 CLASS OF TRUNK FOR CALL PROCESSING

DIS-TGACC:3;

H500: AMO TGACC STARTED

TGRP NUMBER	:	3	TGRP NAME	:	LOOP START CO'S /N	MAXIMUM NO:	2
SUBGROUP NUMBER:	2	DEVICE TYPE:	LOOP START	DIR TYPE	:	BOTH	
ACD THRESHOLD	:	*	TRACENO	:	0	USAGE TYPE:	TERR
ALLOCATED TO AT LEAST ONE ROUTE						GDTR RULE	:
SELECTION	:	ROUND	CFBLOCK	:	DISABLED		
THE FOLLOWING PORTS (LTG-LTU-SLOT-CIRCUIT) ARE ALLOCATED:							
1- 2- 31- 0	1- 2- 31- 1	- - -	- - -	- - -	- - -	- - -	- - -

AMO-TGACC-226 TRUNK GROUP ACCESS CODE

DIS-COS: COS, 75;

H500: AMO COS STARTED

COS	VOICE	DTE	FAX
75	CFWCO MDR PRISTN SPKRCALL TTT VC	URTA	

AMO-COS -226 CLASSES OF SERVICE, SWITCHING UNIT



Analog Station Configuration

DIS-SCSU:2025,ALL;

H500: AMO SCSU STARTED

STNO	2025	NAME	ANALOG	TEST				ACT	DEV
COS1	60	COSX	0	DIAL	DTMF	DLIDX	-	DEVFUNC	ANATE
COS2	60	SPDC1	-	DPLN	0	TA	N	PEN	1-2-79-1
LCRCOSV1	12	SPDC2	-	HTLNIDX	-	TADLIDX	-	PUBSCR	2025
LCRCOSV2	12	SPDI	10	ITR	0	TAINS	-	ACTCDE	000000000000
LCRCOSD1	-	HANDSFR	-	SPECL	-	ACCLASS	-	NTYPE	-
LCRCOSD2	-	INS	Y	PUGRP	-	QPRIOR	-	RPTYPE	
DSSALERT	-	DTS	N	STD	-	FAXSERV	N	HDSTYPE	
NWBALNO	-	CDIDX	-	WINKOFF	N	SEIZE	-	DTE DL VER	
CFWDV	N	CFWDD	N	DND	N	CALLWAIT	N	VCE DL VER	0
VCP	-	MSGWLMP	-	PHONMAIL	N	COMGRP	-	DNIDSP	-
MAINO	-	CUI	-	KEYM	-	TSI	-	LOCODE	-
DCFWBUSY	N	API	-	EVMS	N	EVMSIDX	0	OPTITYPE	-
TATYPE	-			TATYPE2	-			FLASH	N
PATTERN	-	TFAGROUP	-	ATMADDR	-			SPKALERT	-
RELTEST	N								
FIXED CFW1	-			FIXED CFW2	-			VAR CFW	-
STATION-HUNT	N								
UCD-HUNT	N								
PILOT-HUNT	N								
NIGHTVARIANT	N								

AMO-SCSU -226 SUBSCRIBER CONFIGURATION IN THE SWU

Digital Station Configuration

DIS-ITRHO:HOTDEST;

H500: AMO ITRHO STARTED

HTLNIDX	HOTDEST
1	2001

AMO-ITRHO-226 INT. TRAFFIC RELATIONS GROUPS AND HOTLINE/OFFHOOK INTERCEPT

DIS-ITRHO:HOTDEST;

H500: AMO ITRHO STARTED

HTLNIDX	HOTDEST
1	2001

AMO-ITRHO-226 INT. TRAFFIC RELATIONS GROUPS AND HOTLINE/OFFHOOK INTERCEPT



DIS-SCSU:2001,ALL;

H500: AMO SCSU STARTED

STNO	2001	NAME	PBXGOD				ACT DEV
COS1	60	COSX	0	DIAL	-	DLIDX	DEVFUNC OPTI
COS2	60	SPDC1	-	DPLN	0	TA	PEN 1-2-37-1
LCRCOSV1	5	SPDC2	-	HTLNIDX	-	TADLIDX	PUBSCR 4085272001
LCRCOSV2	5	SPDI	10	ITR	0	TAINS	ACTCDE 000000000000
LCRCOSD1	5	HANDSFR	Y	SPECL	-	ACCLASS	NTYPE UNK
LCRCOSD2	5	INS	Y	PUGRP	-	QPRIOR	RPTYPE
DSSALERT	N	DTS	Y	STD	1	FAXSERV	N/A HDSTYPE NONE
NWBALNO	-	CDIDX	-	WINKOFF	-	SEIZE	DTE DL VER
CFWDV	N	CFWDD	N	DND	N	CALLWAIT	N VCE DL VER 0
VCP	OFF	MSGWLMP	-	PHONMAIL	N	COMGRP	0 DNIDSP Y
MAINO	-	CUI	N	KEYM	0	TSI	1 LOCODE -
DCFWBUSY	N	API	N	EVMS	N	EVMSIDX	0 OPTITYPE 0EADPLC
TATYPE	-			TATYPE2	-		FLASH -
PATTERN	-	TFAGROUP	-	ATMADDR	-		SPKALERT Y
RELTEST	-						
FIXED CFW1	-		FIXED CFW2	-		VAR CFW	-
STATION-HUNT	N						
UCD-HUNT	N						
PILOT-HUNT	N						
NIGHTVARIANT	N						

AMO-SCSU -226 SUBSCRIBER CONFIGURATION IN THE SWU

Configuring the Cisco 2621XM Router

Loop-Start Configuration

Router# **show running-config**

Building configuration...

Current configuration : 1912 bytes

```
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname c2621XM_Analog
!
no logging console
enable password cisco
!
ip subnet-zero
!
no ip domain lookup
!
voice call carrier capacity active
!
voice class dualtone-detect-params 1
cadence-variation 25
!
voice class custom-cptone us-custom
dualtone busy
```



```
frequency 480 620
cadence 500 500
dualtone disconnect
frequency 435
cadence 600 400
!
fax interface-type fax-mail
mta receive maximum-recipients 0
!
interface FastEthernet0/0
no ip address
shutdown
duplex auto
speed auto
!
interface FastEthernet0/1
ip address 1.1.1.2 255.255.255.0
duplex auto
speed auto
!
ip classless
ip http server
ip pim bidir-enable
!
dialer-list 1 protocol ip permit
!
call rsvp-sync
!
voice-port 1/0/0
!
voice-port 1/0/1
!
voice-port 1/1/0
timeouts call-disconnect 1
timeouts ringing 18
timeouts wait-release 3
supervisory disconnect dualtone mid-call
supervisory custom-cptone us-custom
supervisory dualtone-detect-params 1
!
voice-port 1/1/1
!
no mgcp timer receive-rtcp
!
mgcp profile default
!
dial-peer cor custom
!
dial-peer voice 1 pots
destination-pattern 2000
port 1/0/0
!
dial-peer voice 2 pots
destination-pattern 2001
port 1/0/1
!
dial-peer voice 3 pots
destination-pattern 5000
port 1/1/0
!
dial-peer voice 4 pots
destination-pattern 5001
```



```
port 1/1/1
!
dial-peer voice 5 voip
 destination-pattern 3...
 session target ipv4:1.1.1.1
!
dial-peer voice 6 voip
 destination-pattern 2...
 session target ipv4:1.1.1.1
!
dial-peer voice 7 voip
 destination-pattern 4...
 session target ipv4:1.1.1.1
!
dial-peer voice 8 voip
 destination-pattern 6...
 session target ipv4:1.1.1.1
 dtmf-relay h245-alphanumeric
!
line con 0
 exec-timeout 0 0
line aux 0
 exec-timeout 0 0
line vty 0 4
 exec-timeout 0 0
 password c
 login
line vty 5 15
 login
!
end
```

Ground-Start Configuration

```
Router# show running-config
Building configuration...
```

```
Current configuration : 1912 bytes
```

```
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname c2621XM_Analog
!
no logging console
enable password cisco
!
ip subnet-zero
!
no ip domain lookup
!
voice call carrier capacity active
!
voice class dualtone-detect-params 1
 cadence-variation 25
!
voice class custom-cptone us-custom
 dualtone busy
 frequency 480 620
```




```
cadence 500 500
dualtone disconnect
frequency 435
cadence 600 400
!
fax interface-type fax-mail
mta receive maximum-recipients 0
!
interface FastEthernet0/0
no ip address
shutdown
duplex auto
speed auto
!
interface FastEthernet0/1
ip address 1.1.1.2 255.255.255.0
duplex auto
speed auto
!
ip classless
ip http server
ip pim bidir-enable
!
dialer-list 1 protocol ip permit
!
call rsvp-sync
!
voice-port 1/0/0
!
voice-port 1/0/1
!
voice-port 1/1/0
timeouts call-disconnect 1
timeouts ringing 18
timeouts wait-release 3
supervisory disconnect dualtone mid-call
supervisory custom-cptone us-custom
supervisory dualtone-detect-params 1
!
voice-port 1/1/1
!
no mgcp timer receive-rtcp
!
mgcp profile default
!
dial-peer cor custom
!
dial-peer voice 1 pots
destination-pattern 2000
port 1/0/0
!
dial-peer voice 2 pots
destination-pattern 2001
port 1/0/1
!
dial-peer voice 3 pots
destination-pattern 5000
port 1/1/0
!
dial-peer voice 4 pots
destination-pattern 5001
port 1/1/1
```



```
!  
dial-peer voice 5 voip  
  destination-pattern 3...  
  session target ipv4:1.1.1.1  
!  
dial-peer voice 6 voip  
  destination-pattern 2...  
  session target ipv4:1.1.1.1  
!  
dial-peer voice 7 voip  
  destination-pattern 4...  
  session target ipv4:1.1.1.1  
!  
dial-peer voice 8 voip  
  destination-pattern 6...  
  session target ipv4:1.1.1.1  
  dtmf-relay h245-alphanumeric  
!  
line con 0  
  exec-timeout 0 0  
line aux 0  
  exec-timeout 0 0  
line vty 0 4  
  exec-timeout 0 0  
  password c  
  login  
line vty 5 15  
  login  
!  
end
```

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**Corporate Headquarters**

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters

Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters

Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 317 7777
Fax: +65 317 7799

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